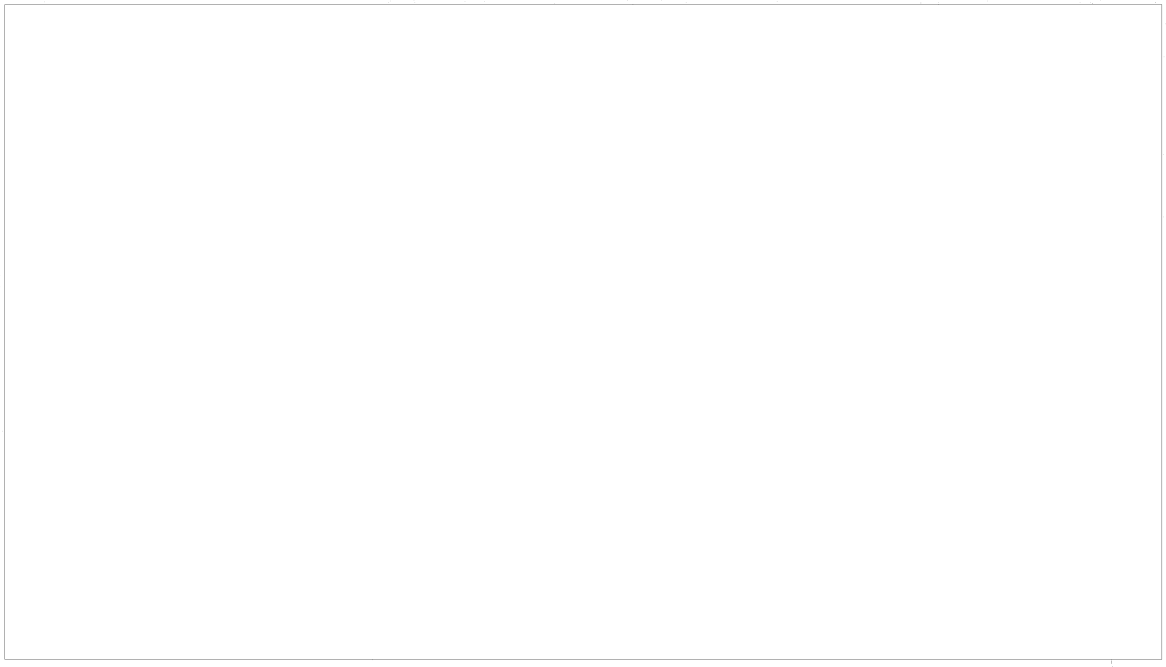

STAT

Soviet World War II Mines and Demolition Equipment

Pz.A.O.K.1, A. Pi. Fd, Beilage G
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Original

Russian Barrel Mine with Underwater Fuze

The mine consists of a barrel, 40 cm diameter, 70 cm high, filled with explosive and provided with a deep well on top, into which the fuze is inserted. The well is closed by a cover, approx. 10 cm in size.

The mine is detonated by an ordinary electric incandescent fuze inserted into the well and jammed into place with pieces of ammunition. The current is supplied by an underwater percussion fuze. This consists of a two-piece brass housing with a lead cap. The lower part of the housing, which can be unscrewed, contains a zinc-carbon element with two insulated wires connected to it. The wires run through the bottom of the housing, which is made of insulating material, to the outside. A retaining disk with a rubber cushion is placed between the lower and upper parts of the housing. On this retaining ring rests a glass tube, filled with chromic acid and attached to the inside wall of the housing and to lead cap by means of 3 retaining springs. The retaining springs are fastened to the glass tube by means of iron sleeves and a piece of string. If the lead cap is subjected to pressure or percussion, the lead wall bends and the glass tube breaks. The chromic acid pours out over the element, generating current which runs through the wires to the incandescent igniter and detonates the mine. The pressure required to set off the mine is not known, as it depends very much on the direction in which it is applied. Lateral pressure causes bending of the tube much more easily than vertical pressure.

The underwater fuze is placed underneath a pressure board of 25 x 60 cm in such a manner, that the board is camouflaged by a layer of earth about 6 - 8 cm deep. The barrel mine is buried at a depth of 2m, and 2 m behind the fuze, and the incandescent igniter and the fuze are wired together. The mine is thus armed - it has no safety device. Its effect is great, corresponding to its charge of about 120 kg. The crater has approximately the size of a large room.

The mine can be disarmed very simply, merely by cutting the wires.

Illustrations:

1. Emplacement of Barrel mine

Holzdeckel - wooden cover

Seeminenzuender - underwater (naval mine) fuze

Befestigungsbrett - fastening board

Zuendleitung - Detonator wires

Gluehzuender - incandescent fuze

Zuendladung - Charge

Fassmine - 120 kg Sprengmunition - barrel mine, - 120 kg demolition charge

2. Emplacement of barrel mine

Schritt - paces

Durchlass ...- mined culvert

Gelaende unwegsam ...- impassable terrain, cannot be traveled by heavy vehicles.

3. Fuze:

Bleikappe - lead cap

Wuelste - bulges

Gewinde - thread

Dichtring - sealing ring

Messinggehaeuse - brass case

Messingbund - brass connecting ring

Isolierung - insulation

Kabel - cable

Haltefeder - retaining spring

Glasbehaelter mit Chromsaeure - glass container with chromic acid

Haltehuelse - retaining sleeve

Bindfaden - thread

Gummipolster - rubber cushion

Haltescheibe - retaining disk

Zink-Kohle Element - Zinc-Carbon cell

Russian Flamethrower (the figures refer to the figures on the drawing)

In contrast to the German flamethrower, the Russian flamethrower is built in a fixed position into the ground and used as an anti-infantry, anti-cavalry, and anti-vehicular weapon.

It consists of a steel flask, (4) 550 mm high, cylindrical, with thick walls and a slightly convex bottom. Its diameter is 300 mm. The burning oil is ejected either through a tube (2) or a spray nozzle. The bent end of the tube is screwed onto the flask. It tapers toward the end ; the diameter of the opening is 30 mm. A screw cap (1) near the opening is used to attach the igniter. A siphon tube (5) is attached to the threaded top of the flask. A cylinder containing a cartridge to generate the pressure is screwed onto the top of the flask.

The igniter consists of a briquette which is set on fire by an incandescent fuze and which burns with a blinding white flame. The charge, a pasteboard cylinder, contains 6 bars (130 x 17 mm) of a solid brownish mass. It also contains celluloid scrap and an incandescent igniter.

The charge and the oil igniter are simultaneously set off by an incandescent igniter or by a battery. The charge burns, generating gas which presses the oil through the siphon tube and into the nozzle where it is set on fire by the igniter. The flame is very powerful and has a range of about 25 m. The flame throwers are usually set up in batteries.

New Russian Explosive

Bottles of explosive have been found. The explosive has not yet been further identified. The contents of each bottle weigh about 0.5 kg, are bright yellow and solid. The explosive is not sensitive to pressure or percussion; the bottle may be broken and the contents ground up. In air, the explosive turns brown. According to statements by Russians, it is manufactured by a chemical plant in the Donets region and is called Ammonal. It is said that the explosive was originally was in the form of sludge when it was filled into the bottle, and that it was then dried.

The effect of one bottle, filled with 0.5 kg of Ammonal, corresponds approximately to the effect of 300 grams of German Engineers' Explosive.

Ammonit and Ammonal are probably the same material, as they have the same effect, color, insensitivity to pressure and percussion, condition of the powder, and sensitivity to oxygen. Filling it into bottles probably serves only for preventing the explosive's becoming brittle in air and to allow prolonged storage. Whether it was actually a sludge while filled is not known, but it was dry when found. When holes are drilled into the explosive, the solid structure loosens and it becomes a gritty powder.

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Russian Remote-Control Fuzes

An F-10 remote-control fuze has been recovered intact on 28 Oct 41. The receiver was packed in a rubber bag which contained 4 x 400 grams of explosive. The wavelength could not yet be definitely established, but according to calculations, the numeral "XXVIII" on the fuze corresponds to a wave range of 525 - 550 kc. The fuze contained no explosive charge. In contrast to the receivers found until now, it contains an incandescent bulb, probably to attenuate oscillations of the receiver. It is believed that this modification is to prevent detection of the device by means of DF sets.

Ordnance has established that the incandescent bulb limits the amplitude in the LF part of the set and is to guarantee proper operation at high input voltages.

In individual cases, a/clockwork mechanism is used . It serves to postpone the start of operation of the set, thus prolonging its life.

The following wavelengths for setting off the devices have been identified so far:

528, 530, 585, 611, 623, 809 kc.

374, 392, 538, 583, 635, 730 kc.

The Roman numeral on the outside of the device indicates the wavelength on which it operates.

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Plastic Fuze

a) Description:

The plastic fuze is a time fuze. After corrosion of a copper wire through electrolysis, the striking pin is released. The charge is then set off through a percussion cap and an igniter fuze.

The fuze is set to go off within days or several weeks by insertion of series resistances of various size. The resistances have not yet been examined.

A copper wire (cathode) running through a copper container (anode) is attached to the striking pin and counteracts the striking pin spring. The container holds copper sulfate. The openings are insulated with rubber gaskets. The current, supplied by a dry cell, is regulated by graphite resistances in series. The fuze is disarmed by removal of the resistance, which breaks the circuit. The resistance is located above the cover plate and is easily accessible.

b) Detonation:

Depending on the length of the delay, the proper resistance is placed into the circuit. The current of the dry cell causes electrolyis of the copper wire. The pin is thus freed and strikes the cap.

c) Details:

The plastic housing with rubber gaskets protects the sensitive parts of the fuze from moisture. The cover can be screwed off.

The cover is held in place by a retaining ring and carries the connections for the resistance. The underside of the cover carries the dry cell on which the copper container with the spring holder, spring and pin is fastened. The igniter with percussion cap is screwed into the housing.

d) Disarming

The fuze can be disassembled without danger. The cover is removed, the clamp which holds the resistance is loosened and the resistance removed. This disarms the fuze.

e) Disassembly:

The cover is screwed off, the resistance removed. The retaining ring is carefully taken

loosened with a nail, and the cover plate with dry cell, copper container and pin is taken out.

f) Evaluation:

The fuze can replace the various clockwork fuzes used by the Russians. It cannot be found by a mine detector, since it has very few metal components, unlike the clockwork fuzes, and cannot be detected with listening devices. It is generally used with medium charges.

f) Special note:

The plastic fuze has also been found in connection with incandescent igniters and a battery. In this case, two contact pins are installed in the unit, which close the circuit when the pin strikes.

Legend of Illustration:

Verschlusskappe - Cover cap

Gehaeuse (Pfosstoff) - plastic housing

Dichtungsring - gasket

Befestigungsschraube - fastening screw

Zuendhuetchen - percussion cap

Sprengkapsel - igniter

Graphitwiderstand - graphite resistance

Anschlussklemmen des Widerstandes - resistance terminals

Sprengring - retaining ring

Isolierstoff-Deckplatte - insulating cover plate

Niet- und Loetstelle - soldering and riveting point

Zeitpunkt der Zuendung ... Time of detonation is determined by ohmic value of resistor

Unterteil ...- Undrside of plastic fuze, used as improvised switch for incandescent igniters.

Trockenelement-Pol - Pole of dry cell

Dichtung - gasket

Kupferbehaelter... - copper container with copper sulfate

Dichtungs-Gummiring - rubber gasket

Lager mit Druckfeder- bearing with pressure spring

Schlagbolzenteller - Plate of firing pin

Loetstelle ...-Copper wire soldering point

Schlagbolzenspitze - Point of firing pin

Isolierrohre...- graphite-coated insulator tubing

Mine with Pressure Release Fuze

a) Description

The mine with pressure release fuze can either be used by itself as a booby trap, or to boobytrapk other mines or charges. It has a mechanical fuze and goes off when the pressure is released.

Detonation:

b) The cover is engaged in the eye of the cotter pin of a "simplified fuze". When the pressure is released, two springs press the cover upward. The cotter pin is thus pulled out, the firing pin is released, and the firing pin spring presses it against the percussion cap which sets off the charge. The fuze is made safe by a pin which xkx holds the hooks in place, or by tying the cover down with string.

c) Individual parts:

The wooden box is divided into two sections, the fuze housing and the charge housing. The latter holds 200 grams of explosive. The front wall of the fuze housing can be turned. Size of box: 22 x 7 x 3.5 cm. The cover with hook chases the box on top. It is the element to which the load is applied. The hook engages the xx eye of the cotter pin of the fuze. The cover contains two walls for the uppings. The "simplified fuze" is known from the wooden and iron anti-tank mine. The two springs release the fuze.

d) Uses:

The mine is very suitable as booby trap, and to boobytrap larger charges. At Kharkov it was frequently found connected to time fuzes and remote-control detonating devices.

e) Removal:

Very difficult. It can be disarmed and removed after it has been made accessible without any reduction in the load on it. As there are usually no safety pins, the cover must be tied down with a wire. This requires great skill.

f) Disassembly:

Without releasing the safety, the fuze housing is opened from the front, and the hook on the cover is disengaged. The fuze can then be pulldd out and the percussion cap removed from it.

g) Evaluation

g) Evaluation

Very simple and effective mine. Its advantage over the German "Z.u.Z.Z." fuze lies in the fact that it is less dangerous for the personnel installing it. It can be installed only by specialists. Time required for installation is short.

h) Special use:

It has also been used as a pressure mine. The modification in this case is as follows: A thread is tied around the box. A vial, probably containing acid, is laid on the thread. If the vial is broken, the acid corrodes the thread, releasing the cover, and the mine goes off.

Legend of illustration:

Belastung - load

Zuender und Federlager - Fuze and spring bearing

Querschnitt - cross-section

Trennungswand - dividing wall

Sprengmittel-Gehaeuse - charge housing

Feder (vordere) - front spring

Deckel - cover

Zughaken - hook

Klappe zum Einsetzen des Zuenders - flap for inserting fuze

Zuendergehaeuse - fuze housing

vereinfachter Zuender mit Splint - simplified fuze with cotter pin

Zuender - fuze

Holzkasten - wooden box

Sprengkoerper - charge

Laengsschnitt - longitudinal section

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Translation of Captured Soviet Regulations for the Employment of Anti-Tank and Anti-Personnel Mine Fields (issuddd 1941)

General Regulations:

1) Aim of the Employment of Mines

a) to cause personnel casualties, disrupt the ememy's organization during battle, to slow the momentum of his attack and foil the attack, and to demoralize the enemy.

b) to eliminate the tanks, combat and supply vehicles of the enemy from the fighting

c) to create those conditions which will deny the use of overland travel routes to the enemy or make their use difficult

d) to hamper reconstruction work by causing constant losses of enemy potential.

2) The most effective and easiest built barrier which will not only detain but may also destroy enemy armor is the anti-tank mine field.

3) Anti-tank mine fields are built ahead of the MLR, about 200 to 600 m in front of the trenches. Anti-tank mines are set on the access roads to bridges and strategic objectives. They may be equipped with time fuzes.

4) Mines in anti-tank mine fields must be placed into rows in such a manner, that a tank traveling through the field in a straight line in any direction will strike one or two mines.

5) To protect anti-tank mine fields, the access roads and the mine fields themselves are also provided with anti-personnel mines. If the distance between the rows of anti-tank mines is more than 10 m, one or two rows of anti-personnel mines can be laid in the field. This creates difficulties for the enemy in clearing the field.

6) The difficulty in clearing such fields lies in the fact that the anti-personnel mines will prevent finding and removal of the anti-tank mines, while the anti-tank mines in turn will prevent tanks from running through the field to set off the anti-personnel mines.

7) If mines are to be used at locations the access to which cannot be covered by small arms or artillery fire, anti-personnel mines must be placed in front of the anti-tank mine field. If other types of barriers are to be reinforced by mines, the mine fields are to

be staggered behind the barrier, to hamper the use of clearing equipment.

8) To accelerate mine-laying, especially in case of an impending breakthrough by enemy armor formations, motorized minelayers equipped with slides are to be used. Two such minelayers/ with 4-ton trailers can cover a sector of the front 300-400 m in width within 10 minutes. If the mines are laid by machine, hasty camouflage is to be used, utilizing the grass, cultivated fields, piles of earth, etc.

9) Mines which can be made to detonate at the definite instant (remote control) and which are laid in narrow defiles are very effective against tanks. In this case, the anti-personnel mines which are not remote-controlled are laid no less than 50 m and no more than 600 m in front of the forward trenches.

10) All methods of laying minefields must remain a mystery to the enemy. For this purpose, anti-tank and anti-personnel mines should be mixed, and the following additional measures should be taken: Use of mines with remote-controlled detonation, dummy mines, boobytrapped mines, boobytraps.

11) The use of anti-personnel and anti-tank mines must not interfere with attacks by the own troops. For this purpose, gaps must be provided through the minefields. These passages are closed in case of retreat. These gaps must be located at points inaccessible to enemy observation and fire. They must be clearly marked for the own troops and covered by machine-gun crossfire. If anti-personnel barriers (barbed wire) are reinforced by anti-tank minefields, the fields must be carefully spotted and provided with gaps.

12) Remote-control anti-personnel mines are laid

a) for protection of the infantry, 50-100 m in front of the trenches

b) to protect airfields from enemy landings

c) on the access roads to important military objects

13) Mines with remote-control and anti-personnel mines to reinforce barbed-wire barriers are laid by order of the battalion commander. Gaps must be left, in case of attack by his own troops.

14) Boobytraps are to be set by the last of the rear guard, but preparations and installation may be arranged previously.

15) Location of individual minefields is carried out by the regimental commander, with approval of the division commander. The type of minefield to be laid is determined by the technician in charge.

16) The following data are made out for anti-tank or anti-personnel mines, in quadruplicate:

a) sketch or map 1:5,000, showing the mine fields and an explanation

b) Individual maps for each minefield, scale 1:1,000. For long minefields strip maps can be made and pasted together.

17) For boobytraps in buildings, storage depots, etc., individual maps are made, one for each mined object.

18) The sketches showing the layout of the minefields, and the individual minefield maps are kept at the staff of the infantry regiment, infantry division, infantry corps, and at the unit which laid the minefield. They are classified "Secret" and kept separate from all other papers.

19) All data on minefields are to be destroyed only if there is danger of their being captured by the enemy or if the minefields are removed.

20) Officers are selected as the persons in charge to safeguard the efficiency of the minefields, maintenance of the marked gaps, and keeping the data up to date.

21) Each engineer (pioneers)/company and battalion of the infantry divisions and corps, and each engineer battalion must have a special topographic unit.

22) Minefields are to be guarded. Guarding may be abandoned only after the own troops have arrived, during retreat, or if the minefield is removed to permit an attack by the own troops.

23) Special attention is to be given to passing troops through minefields during retreats. The troops are to be met by special guides at the assembly points and led through the minefields.

24) To facilitate guarding of minefields left behind the lines during an advance, they can be provided with warning signs or fended in.

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Excerpts from Captured Soviet Instructions on Laying of Minefields

Legend of Illustrations:

Fig.1: Scheme of laying an anti-tank minefield for all types of mines. l = distance between mines in the same row, generally 4 to 5 m.

Linker Rand = left edge of minefield

Fig.2: Scheme of laying minefield of TM 35 anti-tank mines.

Fig.3: Sample of map showing individual mines. N(neizvlekaemye miny = non-removable mines) = booby-trapped mines.

Ackergelaende = cultivated fields

Steinhaufen = stone pile.

Figure 4: Various possibilities of mixed anti-tank and anti-personnel minefields.

Hatched = anti-personnel mines; cross-hatched = anti-tank mines

Stellung = position.

Excerpts from Captured Soviet Instructions: Types of Mines

Anti-tank Mines:

1) TM 35 : Sheet steel. Simple fuze UV or MUV. Length 22 cm, width 22 cm, height 10 cm, total weight 5.3 kg, charge 2.8 kg, critical load 300 - 500 kg.

2) TMD 40 : Wooden mine with two fuzes, UV or MUV ("coffin mine"). Length 60 cm, width 13 cm, height 10 cm, total weight 5 -5.5 kg, charge 3.6 kg, critical load 250-400 kg.

3) TM 39: Metal mine, resembles TMD, 1 UV or MUV fuze. Length 60 cm, width 14.5 cm, height 10 cm, total weight 5.2 kg, charge 3.6 kg, critical load 300 - 500 kg.

4) MiG flying anti-tank mine: Total weight 15 kg, mine without mortar 9.5 kg, weight of mortar 3.5 kg, charge 3 kg. Range 20 - 25 m, length without mortar 0.65 m. Diameter of projectile 10 cm, width of mortar 20 cm, height of mortar 20 cm, critical pull 10 - 20 kg.

5) AKS rod mine, also used on dogs. Length of box 23 cm, width 23 cm, height with rod 76cm, without rod 12 cm, charge 6 kg, total weight 9 kg, critical pressure 5-20 kg, critical inclination of rod 20-30°.

6) PMS 40 , corresponds to German Teller mine. To be used as anti-personnel mine only on

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orders of Army Engineers Commander. Fuze: Metal cap is pushed in, activating pin.

Total weight 6.9 kg, without fuze 6.5 kg. Charge 3.3-3.5 kg, diameter 28 cm, height 10.3-10.8 cm.

Anti-personnel mines:

1. PMM 3 - metal mine with striker pin. If pressure is applied, pin strikes percussion cap. This ignites detonator. Size and weight not given.
2. PMM 5 - metal mine, used against ski troops. See detailed description.
3. PMD 6 - wooden mine with UV or MUV fuze. 183 x 64 x 31 mm.
4. PMK 40 - pasteboard mine with mechanical fuze. Weight 90 g, charge 50 g, pasteboard cover weighs 30 g, metal parts 10 g. Diameter 67 mm. Height 35 mm. Critical load 10 - 20 kg.
5. OSM 40 - fragmentation mine. Shell, with electrical fuze. Total weight 50.55 kg.

PMM 5 - Anti-Ski-Troop Mine (Numbers refer to the numbers on the diagram)

The mine is used against ski troops. Mine container 1 is made of metal; it is divided into two sections. The left portion contains the detonating device, the right portion which can be opened at the front end, contains the charge. Bolt 2 with angle iron 4 soldered to it to give the mine more stability closes it. The detonating device consists of a fuze tube soldered to the front wall and to the dividing wall. It contains the firing pin and the firing pin spring. The cocking lever keeps the pin in the cocked position. The tripping loop 3 is welded to the ends of the axle of the cocking lever. The safety pin 5 is run through holes in the sides of tripping loop and kept in place by a clamp. It keeps the tripping loop in position, to prevent its being pressed down prematurely and thus detonating the mine. The charge consists of a 200-gram package, with a detonator with percussion cap inserted. The mine goes off when the load of a human foot, a horse's hoof, etc. presses down the tripping loop. The loop goes down, turning the axle to which the cocking lever is attached, thus releasing the pin which strikes the percussion cap. The mine is best used against skiers; it is camouflaged with snow, or placed underneath ski tracks.

Removal of Mines from Railroad Lines

Railroad lines were found to be mined with charges or mines to be detonated either by percussion or time fuzes. The bakelite or electrolytic time fuze was used. In order to check the railroad lines, the many demolished and blasted switches had to be removed and investigated, as Russian workers stated that these blasted switches were frequently dummy demolitions, with another charge underneath the place of damage.

It was frequently found that the rail bulges upward at mined points. According to statements by a Russian, charges are often placed underneath rails by lifting them with a winch. Such bulges are therefore telltale marks for demolition charges under the rails.

Demolition charges in abutments of railroad bridges are placed in a vertical shaft in the ground.

Demolition charges underneath the rails along the right of way are frequently marked with a spike driven into the end of the crosstie.

Many of the charges were so badly affected by the weather that they did not explode although the long-time delay fuze had gone off.

Experiences with the Bakelite Fuze

The resistances are made industrially by baking a graphite layer onto porcelain. They are measured afterward and the number of days of delay (GVT) determined by means of a table. As the graphite mass varies in consistency and thickness, the number of windings and widths of graphite areas is no indications for the ohmic value.

The measurements were made with a milliammeter and a voltage of 90 V.

GVT value	Resistance in Ω	Amperage at 1.5 V battery voltage
55	approx. 69200	approx. 0.0217 mA
65	77600	0.019
80	90000	0.016
102	118400	0.0126
134	150000	0.01

The time required for corrosion is proportional to the resistance, or inversely proportional to the amperage. Or: The greater the resistance, the lower the amperage, and the longer the time.

After expiration of the delay time, the instant of ignition can be considerably delayed if the fuze is not subjected to any percussion, while it may be considerably moved up if such percussion occurs during the delay time.

Shortcomings:

1. The time of detonation depends on the voltage of the copper wire in the copper sulfate solution.
2. It depends on the surface condition of the copper wire (quick corrosion if smooth, slow if rough).
3. It depends on the outside temperature. Rate of corrosion drops with lower temperature. Example: A fuze was removed at an outside temperature of -20° C. The non-com in charge put it in his overcoat pocket. After it had warmed up, it went off in his pocket.

Russian Remote-Control Igniters

In addition to the remote-control fuzes F 10, the Soviets also intend to use or already are using devices which are activated by accoustic or optical waves. Reportedly, these devices can also be set off from an airplane flying at 2000 to 3000 meters altitude. See sketches.

Legend of drawings:

No.1: Infrared-ray receiver

1- thermo element
2- transformer
3- tube amplifier
4- transformer for output current
5- relay
6- armature
7- switch
8- contacts
9- toothed wheel
10- contacts on toothed wheel, connected by rings
11- Shaft with cams
12- lever
13- spiral spring
14- toothed segment
15- movable brush
16- contacts for current and to detonator cap

No 2: Infrared-ray transmitter

1 - reflector
2 - tungsten filament (pencil thickness)
3- filter for infrared rays (ebonite plate)
4- lead slide or bolt
5- spiral spring
6- solenoid core
7- solenoid coil
8- brush
9- metal ring
10- drum with contact assembly
11- box with movable brush
12- small electr motor
13- solenoid switch
14- motor switch
15- fuses
16- circuit breaker
17- main line fuse
18- block capacitor
19- dynamo armature
20- coil windings
21- coil regulator
22- resistance

The VMG Mine

This mine is primarily meant for employment during the winter against tanks and other vehicles. With a smaller charge and an over-all weight of 3 to 4 kg, it can also be used as an anti-personnel mine.

Total weight: 10 kg; weight of charge: approx. 8 kg; weight of supplementary charge : 2 TNT blocks of 200 grams each; detonation by detonator cap; mechanical release. Wooden components: 80 per cent of total - difficult to detect with mine detectors.

Construction of the mine:

The housing:

The housing consists of a bottom, a cover, two movable and two immovable sides which are inserted. The cover of the housing has two openings through which the slide bars can move with any pressure. The center of the charge is taken up by a block containing a striker mechanism, and a supplementary charge, as well as the principal charge of pressed TNT.

2) the cover:

The cover is a board fastened in the center on an axis and movable up and down like a balance. There are also two conical side pieces, fastened to the cover. The axle of the balance-like cover is attached to the upper corner of these side pieces. The pins of the pressure release are fastened to the ends of the cover by means of hinges. The axle is held in place by means of straps and metal components.

3) The pressure- and percussion mechanism

Consists of: a) pressure release, b) the platform [?- bearing?] of the pressure release, c) the crank [?], d) two hinges, e) the striker, f) a spring. The entire mechanism is located in the blocks on the side of the device.

3) Arming:

Before the cap is inserted, the side slides must be removed and the cover taken off. Then the pressure release blocks are pulled upward and the blocks with the striker mechanism are removed. After this has been done, the caps are inserted, and the device is then reassembled in the reverse order. Prior to replacing the cover, the safety pins are inserted. After the cover has been fastened, they are removed again.

4) Detonation

Stepping on one of the two horizontal halves of the cover causes it to move downward. The pressure is transmitted to the striker mechanism, which detonates the supplementary charge and the latter sets off the entire mine.

Legend of illustration

1- Housing (upper part)

2- Principal charge

3- Supplementary charge

4- Cover

5- Side of cover

6- Axle of cover

7- Block of striker mechanism

8- Conical pressure release

9- Spiral springs of cover

10-Lateral slides

11-Pressure surface

12-Pressure latch

13-Fixed hinge

14-Striker

15 -~~Striker spring~~ Movable hinge

16-Striker spring

17-Detonator cap

18-Rear plywood wall

19-Safety pins

Small Russian Box Mine

Small dimension and weight and very simple operation permit its use by very small patrol units. They are particularly suitable for mining footpaths and foot tracks and sleigh tracks through the snow. The mine is placed into a hollow made in the snow underneath the path, so that perfect camouflage is easily accomplished.

The mines are laid as follows: A barrier of three rows, at equal distance from each other, with the mines in each row spaced 15 cm apart, is laid across the path and extending 3 m beyond each side of the path.

Description:

The wooden box with a pressure cover contains a charge of 200 grams. The fuze with detonator cap is inserted from the outside through the front wall of the box, in such a manner that the safety pin remains outside the box. The front wall of the box has a slit whose diameter is equal to the diameter of the striker. The cover is placed loosely on the safety pin over the striker. The slightest pressure on the cover of the mine presses the safety pin out of the striker, whereupon the striker plunges forward and detonates the mine.

Illustration:

Druckrichtung - direction of pressure

Druckdeckel - pressure cover

Sicherungsstift - safety pin

Schlagbolzen - striker

Sprengkapsel - detonator

Ladung - charge

Russian Pull- and Release Mine (the letters refer to the letters on the diagram)

a) Construction:

The mine is in a wooden case. The current source is a flashlight battery a. The other components are the charge b, incandescent igniter c, terminal box d, and contacts e and f.

b) Operation

The mine is laid with the terminals of the incandescent igniter not attached to the terminal box, as the circuit would be closed otherwise. After the mine has been put in place, the tension wires of the contacts are stretched tight and fastened to stakes. The circuit is thus broken at two points. Then the ends of the incandescent igniter are set in place through the flap in the cover of the mine. If both tension wires are cut, the contacts close and the mine goes off. Detonation also takens place when the tension wire from contact e is pulled and tension wire from contact e is stretched tight and the one from contact f is cut. A third possibility is to slacken the tension wire from contact f after the mine has been laid, so that the contact will close, while the tension wire from contact e is stretched half-tight. Then contact e will respond both to pulling and to cutting the wire.

c) Disarming

Extreme caution is required. The flap in the cover is opened and the two ends of the incandescend detonator are removed from the terminal box. Great care must be taken not to move the mine during this operation, because the tension wires will otherwise become loose and close the contacts, setting off the mine. It is best to have a second man hold the wires stretched tight. If this is not possible, the mine must be detonated by placing an explosive charge on top of it.

Illustration:

Improvised Mine made of a large Can and Blasting Cartridges

Legend:

Draufsicht ...- Top view, cover and iron parts removed

Holzdeckel - wooden cover

Naegel...- nails and other iron pieces

Bohrpatrone ...- Blasting cartridge

Zuendkanal ...- igniter well

The mine is used as a trip-wire mine with a pull release fuze. It is emplaced obliquely and must be anchored to stakes. Its effect resembles that of the German S-mine ["Bouncing Betty"].

Illustration:

Improvised mine made of a 15-cm Shell Casing, 4 Russian Hand Grenades and a Blasting Cartridge

Legend same as above

Handgranate - hand grenade

Used as trip-wire mine with pull release fuze. Emplaced obliquely to ensure proper operation of fuze. Effect resembles that of German S-Mine.

Illustration:

Improvised Mine made of Small Can and Blasting Cartridges

Legend and other descriptions same as above.

Illustration:

Improvised Mine made of an Infantry Howitzer Shell Case and Heads of Potato-Masher Grenades

Legend:

Kartuschhuelse I.G. - infantry howitzer shell case

Handgranatentoepfe - grendde heads

Equipped with wooden cover, pull-release fuze, and tension wire.

Other legend and dascriptions same as above.

Incendiary Bottles

A captured Soviet patrol carried two bottles containing a yellowish liquid. Analysis showed it to be 18 % phosphorus and 82% carbon disulfide. The liquid ignites spontaneously at +10 to +15°C with strong generating of smoke and burns for about 3 to 4 minuts. The high adhesive property of the phosphorus will cause the liquid to ignite upon warming even a fairly long time after it has been spilled (on tanks). The smoke causes coughing and breathing difficulties. The liquid is extremely dangerous, causing ~~xxx~~ kx skin burns which heal only with great difficulty and destroying clothing.

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Excerpts from Orders to Troops on the Southern Front on Minelaying Procedures

1. Minefields are to be placed in strict accordance with the operational intentions of the commander and in accordance with the prevailing tactical situation.

2. In defense, mine fields are to be laid in front of the forward lines and also in the zone of resistance.

In front of the forward line, the mine fields are to be laid 200-600 m from the trenches, and should cover all roads, probable routes of advance of enemy armor, defiles, detours, and all crossroads.

In the zone of defense, all positions of shock troops, all artillery emplacements - especially of anti-tank artillery - and all command posts are to be protected by minefields.

In case of attack, mine fields are to be laid on the probable routes of advance of motorized and mechanized enemy troops, in order to secure the flanks of the attacking troops, and to prevent obvious intentions of counterattacks by enemy motorized units. In case of an enforced halt during the attack, minefields are to be laid to secure and fortify the most important points of terrain taken from the enemy.

During a lull in the fighting, all routes and possible supply roads of the enemy are to be mined at nightfall to prevent an unexpected enemy counterattack during the night. When the attack is renewed at daybreak, these minefields are to be removed.

If the front becomes inactive, all routes and entrances to towns are to be secured with minefields.

4. Anti-tank minefields must be 100-200 m deep; they are to be laid out in the form of small groups of 10-12 mines each, arranged in a checkerboard pattern.

5. Anti-clearance mines (i.e. mines which have a special attachment, e.g. a rod, for being detonated also by vehicles with high clearance) are to be laid only in terrain with high grass or small shrubs which will afford good camouflage.

6. Anti-tank minefields are to be protected by anti-personnel mines laid 20-100 m in front of the minefield and in the minefield itself.

7. Anti-personnel mines are to be laid in covered areas, in protected points of access to the forward lines, and also together with other anti-personnel obstacles such as barbed

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wire.

8. In defense, large-scale use is to be made of controlled anti-personnel and anti-tank mines. They are to cover all access to bridges, road fills and cuts, dams, etc.

10. [Point 9 is omitted]. Minefield patterns should not be standardized. Every possible variant of laying anti-tank mines together with anti-personnel, dummy, remote-controlled, and demolition mines is to be used.

11. The minefields must be laid within range of the own machine guns and anti-tank guns. Where the terrain prevents this, the minefields must be protected by anti-personnel mines.

12. Dummy mine fields are to be used on a large scale. The dummy mines should be 2 to 4 times as great as that of armed mines. Each dummy mine field must contain 5 to 10% armed mines.

13. In defence, compact mine fields in front of the forward lines must be provided with gaps for patrol activity and eventual attack. The gaps are to be located at points protected from enemy observation and fire and must be covered by cross-fire of the own machine-guns and anti-tank guns. In case of large-scale attack by the own troops, the mine fields in front of the forward lines are to be removed.

15. [Point 14 omitted]. To prevent casualties by the own men in the minefields, they are to be guarded, marked by pre-arranged signs and surrounded by simple or double wire.

16. In case of retreat, large-scale laying of mines with delay fuzes is to be carried out, as it is to be expected that these mines will be effective along the entire enemy tactical depth. These mines are to be placed at the probable locations of enemy staffs, observation posts and command posts, at the probable location of billets of reserves, the probable jump-off positions of enemy armor, along the roads, defiles, and all other tactical objects.

DM-Mine

The mine is an ordinary wooden box with cover, which contains the charge of 1200 grams. Additional charges can be placed underneath it. The mine has an electric detonator. This is a round metal casing, 11 cm diameter, 4.5 cm high, with a cover fastened to the box with tar to make it waterproof. The casing contains a clockwork mechanism, a 4.35 volt flashlight battery, and 2 spiral contacts.

When a 16-volt battery is connected for 5 - 10 seconds to the detonating mechanism, a little wire in the wound clockwork melts through. The wire holds a ratchet on one of the clockwork wheels. The clockwork is now released and runs down. It runs about 4 minutes, until a metal pointer hits a stop screw. The circuit is now broken only by the two spiral contacts which are in series. The slightest concussion near the mine causes them to vibrate; the circuit is closed and the flashlight battery sets of the incandescent fuze.

Once the mine has been armed by letting the clockwork run down, it cannot be disarmed or removed. If found by mine detectors, it must be set off.

Illustration:

Legend:

Uhrwerk - Clockwork

Raste fuer Uhrwerk - ratchet for clockwork

Draehtchen - little wire

Taschenlampenbatterie - flashlight battery

Begrenzungsschraube - stop screw

Metallzeiger - metal pointer

Spiralkontakte - spiral contacts

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Russian Stick Mine

Weight 1700 grams (without stick and fuze) . Cylindrical form, diameter 62 mm, height 135 mm. Cast-iron jacket, approx 1 cm thick, with waffle-like grooves, and two openings. Charge: about 100 grams, apparently TNT.

The lower opening in the jacket, with a diameter of 33 mm, serves to place the mine on a stick which has been rammed into the ground. A sheet of pasteboard and a layer of wax prevent moisture from entering through this opening and damaging the explosive. The upper opening of 13 mm diameter serves for inserting the fuze. The opening is not threaded; the fuze is merely stuck in. The fuze is the same striker pin fuze with a red detonator which is used in all known wooden and metal mines. It is set off by pulling out the safety pin to which a trip wire is connected. The stick is an factory-made pine stick, 2602 mm high and 30 mm thick.

The mines are generally placed near trees or shrubs in groups of at least 4 mines, one behind the other and 2 to 3 m apart. Two mines each are connected by a fine trip wire which is attached to the safety pins of the two mines. A second wire is attached to each mine, running from the upper end of the striker in the fuze to a tree, in opposite direction of the trip wire. All wires are loose, about 20 cm above the ground. Tearing of the wire by firing is rare. The mines have camouflage paint and are hard to make out among shrubbery. Disarming is easy and not dangerous. All wires are cut, the fuze is carefully lifted out and the detonator cap unscrewed.

See illustration: Baum - tree; Verlegeart - manner of emplacemant, Spanndraht - trip wire. Second illustration: Zuender - fuze; Aussenmantel - cast-iron outer jacket; Sprengkapsel - detonator cap; Sprengstoff - explosive; Pappdeckel - pasteboard cover; Wachsschicht - wax layer; Stock - stick.

"Elektrolyth" Fuze

Description:

The fuze is housed in a black plastic case with screw top. It is held by a retaining ring on the inside.

The fuze:

The fuse is made up of a striker and pin, a copper cylinder filled with a caustic solution and closed on both ends with rubber plates, a small dry cell, a thin copper wire running from one pole of the element to the striker and keeping the spring cocked, a resistance (ohmic value varies with each fuze), and the detonator cap with a male thread.

Mode of operation:

The striker and the pin are held only by the thin copper wire which is connected to one pole of the dry cell. If the circuit containing the resistance is closed, the current from the other pole runs through the resistance to the copper cylinder and causes the caustic solution to electrolyze the copper wire slowly until it is eaten through. This releases the spring and the striker sets off the detonator. The resistance is connected only after the other components have been assembled. It carries two numbers, the upper one giving the days, the lower one the hours which will elapse until the fuze is detonated.

Illustration:

Widerstand - resistance

Gummiring - rubber ring

Sprengring - retaining ring

Isolierplatten - insulation plates

Element - dry cell

Kunststoffgehaeuse - synthetic plastic housing

Gummidichtung - rubber gasket

Schlagbolzenfeder - Striker spring

Kupferdraht - copper wire

Schlagbolzen - striker

Gewinde zum Einschrauben der Sprengkapsel - thread for inserting detonator

New Soviet Mine

This mine was found on captured parachutists who had been dropped with the mission of destroying railroad lines.

Description:

The mine consists of a wooden box, 17 x 10 x 6 cm, subdivided into a small space for the charge (600 grams), and a larger space for the electrical fuze, an incandescent detonator, a flashlight battery, 2 contacts with tongues and springs, an insulated cable with a push-button, a small vial with acid, a plug to connect the detonator, and a device for attaching a telltale lamp. The mine is designed mostly for railroad demolitions and is of the booby-trap type.

Emplacement and mode of operation:

1) Contact K 1 (cf. illustration), at rest position, connects the plug and one pole of the battery. During installing of the mine, it is opened by pulling up the tongue with a string which is tied to an outside object.

2) The detonating mechanism is tested by attaching a flashlight bulb and activating contact K 2 and pushbutton D.

3) The incandescent detonator is connected to the plug and the cover is put on.

4) Pushbutton D is laid underneath the rail, or the insulated cable is laid over the rail.

5) A stone is laid on top of the rubber-covered tongue of contact K 2, thus opening the circuit also at this point.

6) To arm the mine, acid from the vial is dropped on the string which holds open the tongue of contact K 1. It slowly eats through the string, closing the contact and arming the mine.

If a train runs over the insulated cable, the insulation wears off, the circuit is closed, and the mine detonates. If the stone is removed from the cover, in an attempt to remove the mine, the circuit is closed through contact K 2 which is in parallel with the pushbutton, add the mine will also go off. The only method for removing the mine is to detach it from the rail without lifting the stone off the cover or pressing the pushbutton or cutting the cable. It must then be detonated at another location.

Illustration:

Raum fuer Sprengmunition = space containing the charge

Raum fuer Zuendverrichtung der Mine = space containing the detonating mechanism

Isoliertes Kabel - insulated cable

Probelampe - telltale lamp

Taschenlampenbatterie - flashlight battery

Sicherungsschnur - safety string

Steckkontakt fuer Gluehzuender - plug for incandescent detonator

Russian Incendiary Bottles.

Ordinary soda-water bottles containing a mixture of gasoline and sulfuric acid. The mixture is delivered ready by the factory. On the neck of the tightly closed bottle there is a fuse, a small board with friction surface, and a phospor match. The fuse is ignited by means of the match struck on the friction surface and the bottle is thrown at the target (distance 15 to 20 meters). Upon impact the bottle breaks, the escaping incendiary liquid ignites immediately. The bottle require very careful handling to prevent premature ignition.

Explosive Flamethrower "Fog 34"

This device is used against live targets such as accumulations of infantry, armor, and cavalry. The flamethrower is buried in the ground and ejects (blasts) a burning liquid. According to prisoner-of-war statements, the device is 65-70 centimeters high, weighs approximately 35 kilograms, and contains 25 liters of incendiary liquid. The pressure inside the container is 50-60 atmospheres. The fuse consists of cardboard and is closed by a cover. It contains seven powder tubes with K-M powder. The primer is connected to the black powder in the cover by means of two detonator cables. The detonator consists of a paper envelope containing a powder-like material which burns with a light-blue flame, and a detonator, likewise in an envelope. The side wall has two openings to admit two wires. Detonation is accomplished with an 80-volt dry battery and a blasting machine System "Ad". The sketch shows an overall view of the device and lists the following component parts: (1) detonating tube coupling piece, (2) chamber for detonator, (3) membrane - operates like a valve, omitting incendiary liquid from container only at pressure of 50-60 atmospheres, (4) detonator cable, (5) fuse neck, (6) upper cover, (7) distributing screen, (8) container for liquid (9) fuel pipe, (10) handles, (11) lower cover, (12) connecting wire, (13) ignition line between cable coil, ignition shaft, detonator, (14) cable coil, (15) 80-volt dry battery.

Russian Mine Detector.

The detector consists of a search ring attached to a broomstick-like handle. The ring further hold a small box ontaining the electrical part of the detector. A cable leads from the search ring and the box to the operator's carphones via a second box containing the batteries. According to the circuit diagram the electrical portion of the device contains two tubes and several resistors. The plate voltage is 60 volts, and the filament voltage, 3 volt.

Russian Partisan Mine

This mine consists of a plywood housing 3.2 x 10 x 13 cm containing a dry-battery cell, a demolition charge of 200 grams as well as a number of ignition circuits, two of which are connected to a push button (a) (resembling that used in an electric-bell system). The cover, whose hinged upper portion may be tilted upward, supports a second circuit breaker with push button (b). In addition, there is a round aperture directly over breaker (s) arranged on the bottom of the housing. Glow igniter as well as glass vial containing a liquid are carried in a separate wooden box. The entire mine, together with the wooden box, is packed in a special cloth bag with two loops so that it may be carried on the (soldier's) belt.

Arming the Mine Glow igniter and glass vial are removed from the box. The glow igniter is inserted in the demolition charge. The cable is connected by plug. The glass vial is placed on the little zinc disc through the round aperture between the charge and the battery cell. Now the hinged section of the cover is placed on the peaked point of the glass vial. Prior to cutting the arming cord (g), which leads through the opening in the cover, button (b) is pressed to interrupt the circuit. Following the cutting of the cord, breaker (S) (safety) on the bottom of the cover falls down and closes the circuit.

Placing and Firing the Mine The mine may be placed individually or in conjunction with larger charges.

a) Firing by pressure: When pressure is applied to the breaker, the blue circuit (see sketch) is closed via plug - glow igniter - safety. The mine is detonated.

b) Firing by pressure release: Upon removal of the load on push button (b) of the cover (which may also be accomplished through trip wire or loops, etc) the red circuit is closed via plug - glow igniter - safety - battery. The mine is detonated.

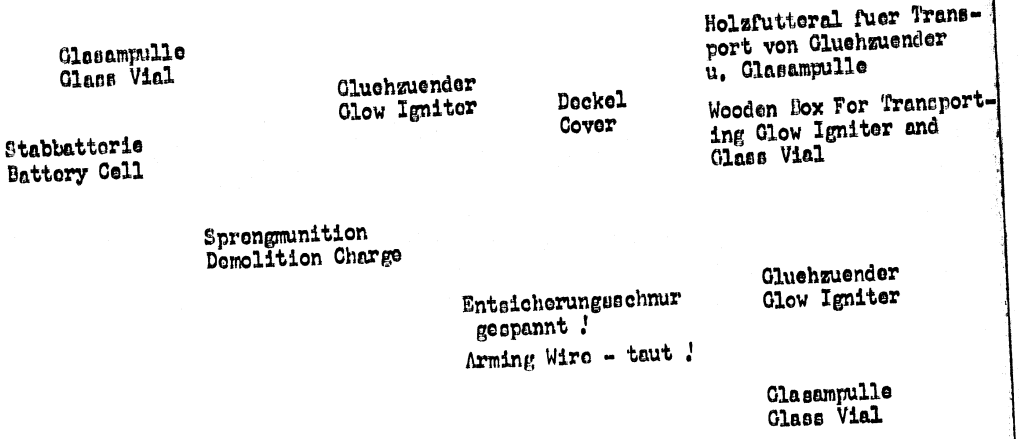
c) Chemico-Electrical Ignition: If the tilted-up section of the cover is brought downward, the copper and zinc plates are wetted by the liquid ejected from the broken glass vial. The liquid is apparently a concentrated acid producing a galvanic current even when only a small amount wets the metal discs. This current sets off the glow igniter (green circuit).

Removal of the Mine

First the exposed cables leading to breaker (a) are cut carefully. With the grdatest care the upper part of the cover may be tilted upward, making sure that a lead is placed on the push button (b) on the cover. Then the cables to this breaker and those leading to the glow igniter are cut. Following this the mine may be removed without danger.

Sketch.

Russian Partisan Mine.



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Russian Wooden Underwater Mine

The mine consists of a wooden box filled with a charge. There is one lever on each of the four sides of the mine. The lower lever serves to remove the safety pin. If the upper lever is touched or moved, the lower lever will rotate about a nail thereby pulling out the safety pin from the fuse and setting off the mine.

The mine is loaded at the shore and put at "safe" by connecting the lower lever with the clamp by a wire or string. Prior to launching the maine or otherwise placing it the wire (string) is cut.

The second type of mine differs from the above one by the horizontal position of the levers. Thus the ~~mark~~ mine is not recognized as such in the water. The mine may be fashioned from cases, boards, or barrels. The manner of firing remains the same. The mine may be placed in swamps, lakes, and rivers. When setting up mine fields, each mine is anchored.

Legend (Sketch)

Type I

Klammer aus Bandeisen (zur Sicherung)
Clamp of Strap Iron (Safety)

Naegel
Nails

Seitenansicht
Side View

Bemerkung: Sprengstoffe sind Wasserdicht einzubauen
Note: Demolition Charge Must be Placed Waterproof

Grundriss
Plan View

Brett zur Schwimmoeglichkeit
Board to Insure Floating

Unterer Hebel
Lower Lever

Zuender
Fuse

Kiste mit Sprengstoff
Case with Demolition Charge

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Type II

Nagel
Nail

Zuender
Fuse

Hebel
Lever

Seitenansicht
Side View

Sprengstoff
Demolition Charge

Brett zur Schwimmoeglichkeit
Board to Insure Floating

Hebel
Lever

Nagel
Nail

Bindfaden (Draht)
String (Wire)

Sicherungsstift
Safety Pin

Zuender
Fuse

Grundriss
Plan View

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New-Type Russian Infantry Mine (Tread Mine).

(Sketch Only)

Seitenansicht
Side View

Druckausloesung
Pressure Firing

oben
Bindfaden verknotet
String knotted on top

umgeboerdelt
flanged

Zuender mit Schlagbolzen
Fuse with Firing Pin

Blechroehrchen
Sheet-Metal Tube

Zuenderoeffnung
Aperture for Fuse

Sprengkapsel (eingeschraubt)
Blasting Cap (screwed in)

Blechhuelle
Sheet-Metal Housing

Tretstift
Tread Pin

Griff
Handle

Aussteifblech
Reinforcing Sheet

Bidfaden eingeschoben
String inserted

Oeffnung fuer Tretstift
Aperture for Tread Pin

Fuellung ca. 400 gr Sprengstoff und Stahlsplitter
Charge, approx. 400 grams explosive and steel splinters

Gesamtgewicht - 3.6. kg
Total Weight 3.6 kg

Bodenblech
Bottom Sheet

Aufsicht
Top View

Zuenderoeffnung
Aperture for Fuse

Griff
Handle

Oeffnung fuer Tretstift
Aperture for Tread Pin

Detail Scale 1:1

Ausgeschmiedet
Forged

Tretstift
Tread Pin

Sicherungsstift
Safety Pin

Schlagbolzen
Firing Pin

Deckel
Cover

Bindfaden
String

Blechroehrchen
Sheet-Metal Tube

Aussteifungsblech
Reinforcing Sheet

Sprengkapsel
Blasting Cap

Fuellung
Charge

Devices for Detonating Explosive Charges By Radio.

As reported by prisoners of war such devices are known by the designation "F 10". Their construction and manner of operation are known.

The supplementary device known as "Berodo Device" is used in demolishing railroad lines. Detonation occurs at the moment of train arrival. No details are available on the latter device.

New Russian Mine - 40 kg

A Russian prisoner of war reports having used a new type of mine, weight 40 kilograms, describing it as follows: The mine is buried in the ground and can be set off in two different ways, namely, by means of a flashlight battery attached to a 300-meter long wire, or, by touching trip wires directly connected to the mine. Similar to the German S-Mine, the Russian mine is said to jump 1 meter high before detonating. The effective radius is said to be 200 meters.

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Description of the "Mina Engliska" /sic 7

According to prisoner-of-war statements, this mine is British-made.

Details known are shown on attached sketch. The invisible parts of the fuse and the type of charge are not known.

The safety ~~nut~~ sleeve (for transporting the mine) missing in picked-up ~~xxxxxxx~~ mines may be replaced temporarily with a wire spiral. Such a spiral made of heavy wire is placed around the pressure bolt between the upper edge of the pressure bolt jacket,or shear pin, and the underside of the pressure bolt head, taking up the entire space and preventing in this fashion the pressure bolt from being moved downward.

For use in boob-trapping, a trip wire is attached to the snap hook. Only a small percentage of the mines encountered had a slit in the pressure cover and a snap hook with small chain on the shear pin.

see leggnd of sketch (attached)

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Sketch of "Mina Englaska"

Ansicht M. 1:4
View, Scale 1:4

Druckdeckel
Pressure Cover

Druckbolzenkopf
Pressure Bolt Head

Sicherungsmanschette
Safety Sleev

Druckbolzenhuelse
Pressure Bolt Jacket

Splint in Sich.Manschette
Peg in Safety Sleeve

Minentopf
Mine Housing

Draufsicht M. 1:4
Top View, Scale 1:4

Druckbolzenkopf
Pressure Bolt Head

Sicherungsmanschette
Safety Sleeve

Splint
Peg

Scherstift
Shear Pin

Sicherung gegen Aufnahme
Booby-trapping

Schlitz
Slit

Druckdeckel
Pressure Cover

Karabinerhaken mit Kette
Snap Hook with Chain

Schnitt a-b-durch Druckdeckel
Section a-b through pressure dover

Kettchen verbunden mit Scherstift
Chain Connected to Shear Pin

Karabinerhaken
Snap Hook

Schnitt A-B
Section A-B M.1:2 Scale 1:2

Druckbolzenkopf
Pressure Bolt Head

Sicherungsmanschette
Safety Sleeve

Minentopf
Mine Housing

Druckbolzen - 0.8
Pressure Bolt - 0.8

Scherstift
Shear Pin

Druckbolzenhuelse
Pressure Bolt Jacket

Asphaltmasse
Asphalt Mass

Schnitt C-D M. 1:1
Section C-D Scale 1:1

Druckbolzenhuelse
Pressure Bolt Jacket

Splint-in Sich.Manschette
Peg in Safety Sleeve

Druckbolzen
Pressure Bolt

Scherstift
Shear Pin

2

New Russian Fragmentation Mine.

The following is a description of an allegedly new type of Russian Mine. It consists of a cylindrical body of iron having the shape of a Munich beer stein. It is 30 centimeters high and has a diamter of 15 centimeters, a weight of 20 kilograms. The bottom is open, having only a thin revolvable sheet-metal plate for transport. An electric igniter is arranged in the bottom. A handle is provided on the side.

The mines are placed openly at 30 meters' interval around a command post. Thet are interconnected by bell wire. The mine field was to be set off from the CP by means of a 120-volt battery. No provision is made on the mine for booby-trapping.

The fragmentation effect of the mine as experienced in combat was 100-150 meters in circumference.

Sketch - Legend

Eisenkoerper
Iron Hull

Gluehzunder
Electric Igniter

Blechplatte
Sheet-Metal Plate

Masstab 1:25
Scale 1;25

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New-Type Russian Mine - Description.

(1) An electrical mine with pull and cut igniter as described on page 80 of pamphlet on Russian Demolition Devices, Igniters, Mines, and Fuses of 1 Jan 1942, with slight modifications. The mine os not made of wood but of grease-impregnated cardboard. The dimensions are somewhat smaller. The brackets with springs B 1 and B 2 are attached laterally. In addition, the mine has a contact which, upon opening of the cover, closes the circuit and detonates the mine.

This mine must never be removed, but always be detonated.

(2) This mine is not listed in above-mentioned pamphlet. It is an electrical mine with booby-trap device to prevent its being picked up and to prevent its cover from being opened. The weight of the charge is approx. 1.5 kilograms. The mine is a plywood box painted white, dimensions 21.5 x 21.5 x 8 cm. It has a hole in the bottom for attaching the booby-trap. The interior of the box contains a movable plywood board bearing an eight-cornered copper ring (bolted on), the ring being open to one side. Between each intermediate piece [sic] we find a copper loop which in turn is connected with one ring on the back of the plywood board.

The electrical igniting device consists of 3 battery cells and 3 contacts, namely,
(a) a contact to prevent the mine from being picked up
(b) a contact to prevent the cover from being opened
(c) a contact made upon pressure from above.

Upon placing the mine, a safety device of hard rubber is placed between the main circuit to eliminate the danger of premature explosion. To avoid premature setting off of the booby-trap, for example, where the ground is soft, a board is placed underneath the mine box, the mine cover is closed, and safety removed upon placing of the mine, so that now the main circuit is broken only through the above-listed 3 contacts.

Detonation will occur in one of the following three cases:

(a) an undetonated mine is located and picked up. The booby-trap is actuated and the circuit is closed

(b) an undetonated mine is left in position but cover is opened, actuating the safety and likewise setting off the mine by closing the current

(c) a vehicle drives over the mine. The copper loops are pressed onto the eight-cornered copper ring and the circuit is closed.

According to prisoner-of-war statements such mines can be expected to be encountered camouflaged as first-aid kits. Pick-up or disraming is impossible. All such mines, therefore, must be detonated.

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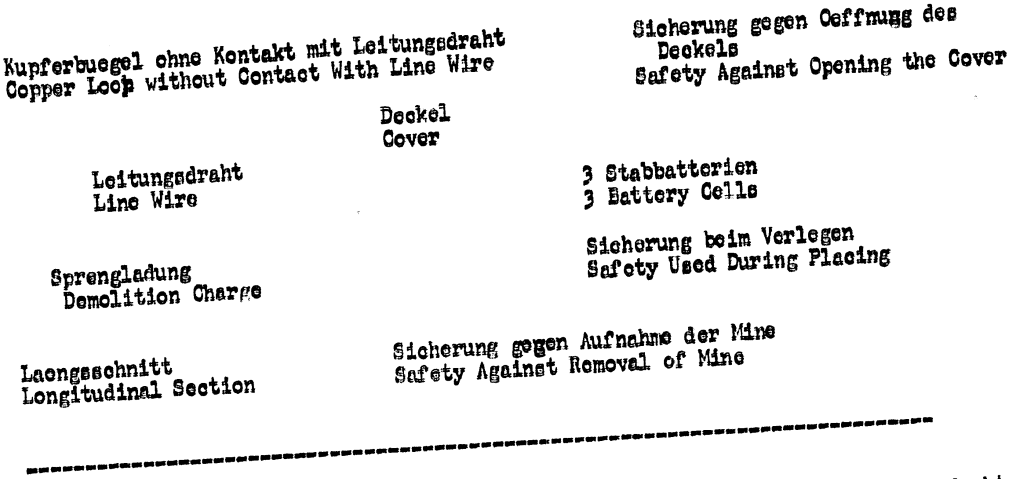
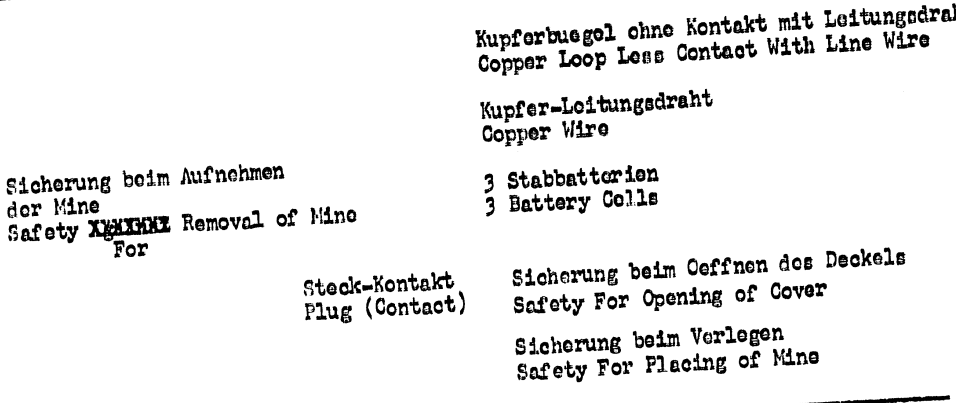
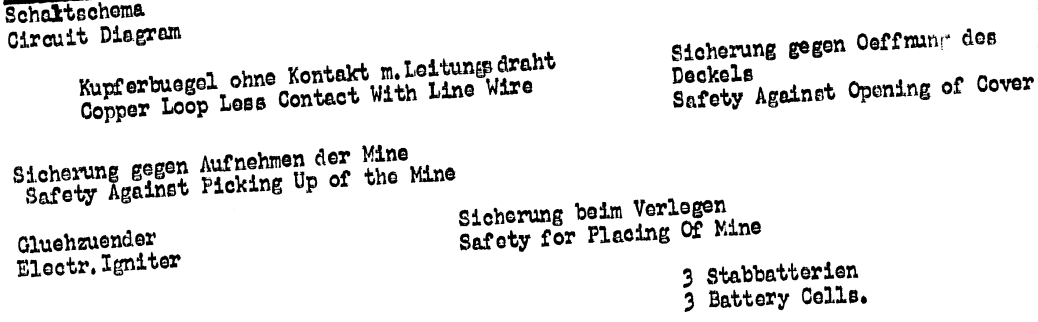
Sketch — Electrical Mine With Booby-Trapping Provision
Scale 1:1







Asian Tar Mine

The tar mine is a round disk, made almost entirely of the sawdust-like charge. The outer cover is made of pasteboard with a tar coating. Total weight 6.3 kg, diameter 26 cm, height 12.5 cm. The center on top is the detonator well. The detonator well is also made of pasteboard and holds a blasting cartridge. A pressure fuze is attached to the top of the blasting cartridge. The upper part of the fuze touches a glass cover screw. The fuze resembles the German Pressure Fuze 35 in its system, but it is much more primitive in its construction. The fuze has no safety device and is detonated at a pressure of only 6 to 8 kg.

The pressure must be applied to the cover screw concentrically. It is transmitted directly to the fuze. As the cover around the charge is comparatively soft, the mine is very sensitive; a pressure of 8 - 12 kg will set it off.

Detection by prodding is difficult, since the cover is soft and gives when struck.

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